

RF Exposure Report

Report No.: SA160922E02F

FCC ID: QXO-7602

Test Model: AP-7602

Received Date: Sep. 22, 2016

Test Date: Nov. 12, 2016

Issued Date: Sep. 11, 2017

Applicant: Extreme Networks, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
SA160922E02F	Original release.	Sep. 11, 2017

1 Certificate of Conformity

Product: Access Point

Brand: Extreme

Test Model: AP-7602

Sample Status: ENGINEERING SAMPLE

Applicant: Extreme Networks, Inc.

Test Date: Nov. 12, 2016

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

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Wendy Wu / Specialist

Approved by : May Chen , **Date:** Sep. 11, 2017
May Chen / Manager

2 RF Exposure

2.1 Limits For Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

No.	PCB Chain No	Brand	Model	Antenna Gain(dBi) Including cable loss	Frequency range	Antenna Type	Connector type	Cable Length (mm)
1	Chain 0	NA	NA	2.61	2.4~2.4835GHz	Dipole	i-pex(MHF)	155
				4.39	5.15~5.25GHz			
				4.2	5.25~5.35GHz			
				4.28	5.47~5.725GHz			
				5.61	5.725~5.85GHz			
2	Chain 1	NA	NA	3.76	2.4~2.4835GHz	Dipole	i-pex(MHF)	182
				5.18	5.15~5.25GHz			
				5.22	5.25~5.35GHz			
				4.44	5.47~5.725GHz			
				5.95	5.725~5.85GHz			
3	BT	NA	NA	1.8	2.4~2.483GHz	Dipole	i-pex(MHF)	88

2.5 Calculation Result of Maximum Conducted Power

WLAN Maximum power

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	183.039	6.21	20	0.15215	1
5180-5240	194.249	7.8	20	0.23286	1
5260-5320	185.704	7.74	20	0.21956	1
5500-5720	162.102	7.85	20	0.17600	1
5745-5825	260.394	8.79	20	0.39207	1

NOTE:

2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.21\text{dBi}$

5GHz:

UNII-1: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.8\text{dBi}$

UNII-2A: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.74\text{dBi}$

UNII-2C: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.37\text{dBi}$

UNII-3: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 8.79\text{dBi}$

For Bluetooth:

BT-EDR

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2402-2480	5.957	1.8	20	0.00179	1

BT-LE

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2402-2480	2.244	1.8	20	0.00068	1

For WLAN / BT coexistence mode:

Condition	Technology		
1	WLAN (2.4GHz-Chain0)	WLAN (5GHz-Chain1)	BT
2	WLAN (2.4GHz-Chain1)	WLAN (5GHz-Chain0)	BT
3	WLAN (2.4GHz-Chain0)	WLAN (2.4GHz-Chain1)	BT
4	WLAN (5GHz-Chain0)	WLAN (5GHz-Chain1)	BT

Condition 1

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462 (Chain 0)	92.257	2.61	20	0.03348	1
5180-5240, 5260-5320, 5500-5720, 5745-5825 (Chain 1)	146.893	5.95	20	0.11501	1
2402-2480	5.957	1.8	20	0.00179	1

Condition 2

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462 (Chain 1)	90.782	3.76	20	0.04293	1
5180-5240, 5260-5320, 5500-5720, 5745-5825 (Chain 0)	116.681	5.61	20	0.08448	1
2402-2480	5.957	1.8	20	0.00179	1

Condition 3

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462 (2TX)	183.039	6.21	20	0.15215	1
2402-2480	5.957	1.8	20	0.00179	1

Condition 4

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5180-5240, 5260-5320, 5500-5720, 5745-5825 (2TX)	260.394	8.79	20	0.39207	1
2402-2480	5.957	1.8	20	0.00179	1

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

Condition 1:

Therefore, the worst-case situation is $0.03348 / 1 + 0.11501 / 1 + 0.00179 / 1 = 0.15028$, which is less than "1".

This confirmed that the device comply with FCC 1.1310 MPE limit.

Condition 2:

Therefore, the worst-case situation is $0.04293 / 1 + 0.08448 / 1 + 0.00179 / 1 = 0.12920$, which is less than "1".

This confirmed that the device comply with FCC 1.1310 MPE limit.

Condition 3:

Therefore, the worst-case situation is $0.15215 / 1 + 0.00179 / 1 = 0.15394$, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

Condition 4:

Therefore, the worst-case situation is $0.39207 / 1 + 0.00179 / 1 = 0.39386$, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

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